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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/570,138	03/01/2006	Takashi Tani	Q81296	5057

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EXAMINER	
KOSLOW, CAROL M	

ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/570,138	TANI ET AL.	
	Examiner	Art Unit	
	C. Melissa Koslow	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-27* is/are pending in the application.

4a) Of the above claim(s) *2-4,7,13 and 22-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 5, 8-12 and 14-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 August 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

This action is in response to applicants' arguments of 26 November 2008 and the amendment of 29 August 2008.

The arguments in the response of 26 November are convincing and the amended process of claim 1 is not directed to a non-elected process since examined claim 15 taught a solvent. The restriction is still applicable since the special technical feature of Group I, which is vaporizing a solution of an organic solvent and an organometallic compound and combusting the vapor in the presence of an oxidizing substance, does not provide a contribution over the prior art in that the claimed generic process is taught by U.S. patent 5,958,361 and WO 03/070640. Applicants are remained that this application was filed under 35 USC 371 and thus restriction practice under PCT rules 13.1 and 13.2 and 35 U.S.C. 121 and 372 apply.

Claims 2-4, 7 13 and 22-27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed 25 March 2008.

The drawings were received on 29 August 2008. These drawings are acceptable and thus the objection over the drawings is withdrawn. The amendments to the claims have overcome the art rejections, the objection to claim 21 and the 35 USC 112 rejections over claims 18-20.

The disclosure is objected to because of the following informalities:

It is unclear for the formulas "$(Y,Gd)_2O_3$", "$(Y,Gd)BO_3$" and "$(Mg,Sr,Ba)Al_{12}O_{19}$" if both of the elements in the parenthesis must be present or if only one need be present. The art interprets these formulas both ways and thus applicants need to make clear which interpretation

they are using. The formula $(Ba,Mg)Al_{10}O_{17}$ is incorrect, as written. The correct way this formula is written is $BaMgAl_{10}O_{17}$. Appropriate correction is required.

Applicants did not amend the specification to overcome the noted informalities. Amending the claims does not define the meaning of "$(Y,Gd)_2O_3$", "$(Y,Gd)BO_3$" and "$(Mg,Sr,Ba)Al_{12}O_{19}$" in the specification. There is no phosphor having the formula $(Ba,Mg)Al_{10}O_{17}$, which has the meaning in the phosphor art of $MAl_{10}O_{17}$, where M is Ba and/or Mg.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The amended formulas of claims 18-20 are not found in the specification.

The teaching of "$(Y,Gd)_2O_3$", "$(Y,Gd)BO_3$" and "$(Mg,Sr,Ba)Al_{12}O_{19}$" and the examples does not provide proper antecedent basis for the claimed formulas.

It is noted that the newly claimed formulas are not new matter since the specification does teach "$(Y,Gd)_2O_3$", "$(Y,Gd)BO_3$" and "$(Mg,Sr,Ba)Al_{12}O_{19}$", teaches the precursors for forming these phosphors on page 12 where yttrium and gadolinium are both listed for forming the borate and where magnesium, barium and strontium are all listed for forming and aluminate having the general formula $MAl_{12}O_{19}$, and gives an example of an oxide containing both yttrium and gadolinium.

Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

This claim teaches a blue phosphor having the formula $Mg_{1-x}Ba_xAl_{10}O_{17}$:Eu which $0<x<1$. There are no phosphors having the claimed formula and thus this claimed is indefinite. The correct formula is $BaMgAl_{10}O_{17}$:Eu as indicated by the examiner in the previous action.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1, 5, 8-10, 12, 14, 16 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent 6,982,046.

This reference teaches nanosized phosphors having a particle size of in the range of 1-500 nm, preferably 1-100 nm (col 3, lines 40-45). The preferred size range falls within that claimed. Column 5, lines 11-26 teaches the nanosized phosphors are produced by dissolving organometallic compounds of the required metals in an organic solvent, forming an aerosol, or vapor, of the solution and combusting the vapor in the presence of excess oxygen as taught in U.S. patent 5,958,361, which is incorporated by reference. U.S. patent 5,958,361 teaches the organometallic are glycolatopolymetalloxane, which are alkoxides that comprise the required metal, carbon and hydrogen atoms and that the combustion process, where the solvent is burned and the organometallic is decomposed, occur at 500-2000°C. The reference teaches the claimed process.

With respect to claims 10 and 12, these claims simply further define the components in the Markush group of claim 9. They do not require that the compounds be metal alkyls or one of the claimed metal β-diketone metal complex. Thus since the reference teaches claim 9, it implicitly teaches claims 10 and 11 since these claims teach the compound can be an alkoxide.

Claims 1, 5, 8-12, 14, 16 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by WO 03/07640.

This reference teaches nanosized oxides by dissolving alkoxides or acetylacetones, or 2,4-pentanediones, of the required metals in an organic solvent, forming an aerosol, or vapor, of the solution and combusting the vapor in the presence of oxygen at a temperature in the range of 900-2500°C to combust the vapor. The taught particles have a size of 100 nm or less. Page 18 teaches that phosphors can be produced by this taught method. The reference teaches the claimed method.

With respect to claims 10 and 11, these claims simply further define the components in the Markush group of claim 9. They do not require that the compounds be metal alkyls or one of the claimed metal alkoxides. Thus since the reference teaches claim 9, it implicitly teaches claims 10 and 11 since these claims teach the compound can be a β-diketone metal complex.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,982,046.

As stated above, the taught process produces phosphor particles having a size in the range of 1-500 nm, which overlaps the claimed range. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ

242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). Also see MPEP 2144.05. As discussed above, this reference teaches the claimed process where the amount of oxygen is in excess. U.S. patent 5,958,361 teaches that this excess amount is that amount which is greater than the stoichiometric amount of oxygen required to produce oxides from the vapor. This amount overlaps the claimed amount since the claimed amount includes the stoichiometric amount of oxygen up to 40 times the stoichiometric amount. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The reference suggests the claimed process.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/070640

As discussed above, this reference teaches the claimed process. It does not teach the amount of oxygen, but it implicitly teaches that it is present in a sufficient amount so as to produce oxide powders for organometallic vapors. This amount appears to at least overlap the claimed amount since the claimed amount is that sufficient to produce oxide powders for organometallic vapors, absent any showing to the contrary. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The reference suggests the claimed process.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/070640 in view of U.S. patent 6,982,046; U.S. patent 6,391,273 and U.S. patent application publication 2002/017886.

As stated above, WO 03/070640 teaches producing phosphor by the claimed method, but it does not teach producing phosphors having the claimed formulas. WO 03/00640 teaches that rare earth activated yttria host phosphor can be produced by the claimed method. U.S. patent 6,982,046 teaches rare earth activated yttria and yttrium borate host phosphors can be produced by a method similar to that in WO 03/07640. U.S. patent 6,391,273 and U.S. patent application publication 2002/017886 teach yttria and yttrium borate host nanosized phosphors and why such phosphors are desirable in the art. Given the teachings in these references, one of ordinary skill in the art would have found it obvious to produce the known nanosized Y_2O_3:Eu and YBO_3:Eu phosphors by the process of WO 03/070640

Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/070640 in view of U.S. patent 6,391,273 and U.S. patent application publication 2002/017886 as applied to claims 17 and 18 above, and further in view of U.S. patent 3,574,131 and 3,684,730.

As discussed above, WO 03/00640 teaches that rare earth activated yttria host phosphor can be produced by the claimed method and U.S. patent 6,391,273 and U.S. patent application publication 2002/017886 teach why it is desirable to have nanosized phosphor particles. U.S. patents 3,574,131 and 3,684,730 teach examples of rare earth activated yttrium oxide phosphor that were well known at the time of invention. One of ordinary skill in the art would have found it obvious to produce the rare earth activated yttrium oxide phosphors of U.S. patents 3,574,131

and 3,684,730, such as terbium or thulium activated yttrium oxide, by the process of WO 03/070640. The references suggest the claimed process.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/070640 in view of U.S. patent 6,982,046, U.S. patent 6,391,273 and U.S. patent application publication 2002/017886 as applied to claim 18 above, and further in view of U.S. patent application publication 2003/0118841.

As discussed above, it would have been obvious to produce YBO_3:Eu by the method of WO 03/070640 for the reasons given above. WO 03/070640 teaches that the metal sources should be alkoxides or carboxylates. U.S. patent application publication 2003/0118841 teaches combustible boron precursors in paragraph 148 and includes ethoxyborate. Thus one of ordinary skill in the art would have found it obvious to use ethoxyborate as the boron source in the process of WO 03/070640 to produce YBO_3:Eu. The references suggest the claimed process.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/cmk/
February 2, 2009

/C. Melissa Koslow/
Primary Examiner
Art Unit 1793